

# PATENT SPECIFICATION

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## PROVISIONAL SPECIFICATION

### Improvements in or relating to Metal Working Presses

*Amend. 11/5/51*

We, HUNTON LIMITED, a company organised under the laws of Great Britain, of 114—116, Euston Road, London, N.W.1, do hereby declare the nature of this invention to be as follows:—

This invention relates to an attachment for use with the combination die and punch described in the specification of our prior Patent No. 602,630.

Our prior specification is concerned with a press tool comprising a bolster frame, a punch head for operation with but independently of the bolster, the bolster frame having an aperture for the clearance of metal removed by the punch and the frame surrounding the aperture having a recess for mounting a die or an annular insert or inserts for supporting a die, which arrangement enables one bolster frame to be adapted to a wide range of die sizes.

According to this invention the punch tool is provided with a spring loaded plate for the purpose of detaching the sheet metal from which the blank is pressed by the punch following its operative stroke.

In one construction the punch head is formed with lugs at opposite sides thereof for mounting plungers carrying the plate, the length of the plungers being such

that on the withdrawal stroke of the punch the heads of the plungers will contact the under-side or a stationary part of the press to cause a displacement of the plate so that the latter will disengage the sheet metal from the punch.

Conveniently the lugs are formed integral with barrel shaped casting for attachment to the punch head or spigot piece to which the punch proper is fixed so that in appearance as seen in plan the casting forms a diamond, the releasing plate having the same diamond shape with a central opening, the size of the opening being such that it is a clearance fit to fit over the head of the punch proper.

The pins are secured to the plate and mounted on the pins between the lugs are compression springs which operate to hold the plate against the under-side of the casting.

The punch holder may be provided with a threaded spigot for mounting punches having a central bore and/or counter-bore or alternatively with a recess for mounting shank type punches.

Dated this 5th day of September, 1947.

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## COMPLETE SPECIFICATION

### Improvements in or relating to Metal Working Presses

We, HUNTON LIMITED, a company organised under the laws of Great Britain, of 114—116, Euston Road, London, N.W.1, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an attachment for use with and is an improvement in the combination die and punch described in the specification of our prior application No. 602,630.

The parent specification is concerned with a press tool comprising a bolster frame, a punch head for operation with

but independently of the bolster, the bolster frame having an aperture for the clearance of metal removed by the punch and the frame surrounding the aperture having a recess for mounting a die or an annular insert or inserts for supporting a die, which arrangement enables one bolster frame to be adapted to a wide range of die sizes.

According to the present invention the punch holder is fitted with a stripper element, said element having an aperture for the passage of the punch and the stripper element is carried by plunger rods adapted on the return stroke of the punch to engage a stationary part of the apparatus and thereby produce a positive movement of the stripper element for the purpose of detaching the piece of sheet metal from which the blank is pressed by the punch following its operative stroke.

In one construction the punch head is formed with lugs at opposite sides thereof for mounting plunger rods carrying the plate, the length of the rods being such that on the withdrawal stroke of the punch the heads of the rods will contact the under-side or a stationary part of the press to cause a relative displacement of the plate so that the latter will disengage the sheet metal from the punch.

The invention is illustrated in the accompanying drawings in which figure 1 is a sectional view of one form of punch holder and its associated stripper plate constructed in accordance with a preferred embodiment of the invention, the holder being shown mounted in the press with the parts in their position about half way through the operative stroke. Figure 2 is a view in elevation but showing the stripper plate in action. Figure 3 is a plan view of the holder.

Referring to the accompanying drawings there is shown at A the moving head of a press, the stationary part of which is indicated at X, the press being of hydraulic or other standard type. In the ram A is a socket B to receive a punch holder, indicated generally at C, the holder C having a spigot D to fit the socket B. The holder C is counterbored as at E to provide a mounting for the shank 31 of a punch element 30 as described in the parent specification No. 602,630.

According to the present invention the punch holder C is provided with a stripper element or plate 1, the plate 1 having a central aperture 2 for the passage of the punch 30, the mouth of the aperture, preferably being undercut, as indicated at 3, to assist in the stripping action, which takes place on the return stroke of the moving head A and punch

30, when detaching the sheets, and following completion of the separate stroke of the punch, and from which sheet a blank has been punched out by the punch element 20 operating in conjunction with a die. Secured to the plate 1 are plunger rods 4 which serve as guides and extend through holes 5 formed in upper and lower sets of lugs 6 and 7 on the punch holder C, return springs 8 being mounted on the rods 4 between the lugs 6, 7.

The punch holder C may be formed of mild steel or other suitable alloy and is provided with a core 9 of hardened steel incorporating the shank D and the socket E for the punch proper. As shown the lugs 6 and 7 are formed integral with a barrel shaped casting so that in appearance as seen in plan, the casting forms a diamond, the stripper plate having the same diamond shape with the central aperture 2, the size of which may vary according to the die but being such that it is a clearance fit to fit over the head of the punch proper.

The length of the plunger rods is such that on the withdrawal stroke of the press tool, the heads of the rods will contact the underside of a stationary part of the press as shown in figure 2 thereby separating the plate 1 from the holder C so that the plate 1 will operate to disengage the sheet metal from the punch. On the downward or working stroke of the punch to the position shown in figure 1 the springs 8 will retract the plate 1 to the figure 1 position.

In operation therefore, the plate 1 when the actuating ram or piston of the punch is at the top of its return stroke, will have moved out of face contact with the sole part 6 of the punch holder D and C. On the downward or working stroke of the punch to the position shown in figure 1, the punch element will enter the die F and punch out a blank during which time the punch holder D and C in its descent will have again picked up the stripper plate 1 which will advance with it, the springs 8 being decompressed. Figure 1 shows the punch element 30 when it has punched out a blank for the sheets and before it starts on its return stroke.

Assuming now the actuating ram is on its upward (return) stroke, the punch element 30 will likewise ascend and the sheet S will remain fast with the perimeter of element 30 until such time as the rods 4 will strike against the face Y of stationary part X. When this occurs the stripper element 1 will separate from the sole of parts C and D and so force the sheet S off the punch element 30.

It will be appreciated therefore that

the action of the stripper element 1 is a positive one by reason of the rods 4 contacting part X. The function of springs 8 being to ensure that when the stripper element 1 is free to move upwardly in relation to parts C, D, the plate 1 must always be pulled back into contact with the sole of the punch holder D E.

The stripper plate is preferably constructed with a peripheral reinforcing shoulder as shown at 10 and it will be understood that the shape of the plate may be modified to suit the size of punch and die. For larger sizes a circular or annular plate is more satisfactory.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. The improvement in or modification of the invention claimed in the parent specification comprising a bolster frame and a punch carried by a punch holder for operation with but independently of the bolster frame, the bolster frame having an aperture for the clearance of metal removed by the punch in which the punch holder is fitted with a stripper element, which stripper element has an

aperture for the passage of the punch, and the stripper element is carried by plunger rods adapted in the return stroke of the punch to engage a stationary part of the apparatus in order to produce a positive movement of the stripper element in relation to the holder to disengage the sheet metal from which the blank is cut.

2. An arrangement as claimed in claim 1 in which the stripper element comprises a plate and the punch holder is provided with lugs for mounting the plunger rods to which the stripper plate is secured, spring means being provided for returning the plate to its withdrawn position.

3. An attachment as claimed in claim 2 comprising a stripper plate having push rods provided with return springs mounted between the lugs on the holder.

4. An attachment to a precision press tool as claimed in the parent specification substantially as described with reference to the accompanying drawings.

Dated this 6th day of September, 1948.  
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[This Drawing is a reproduction of the Original on a reduced scale.]

